

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-47. (canceled)

~~48. (previously presented): The apparatus of claim 74, further comprising:
a thermal insulator positioned at least partially around an exterior surface of the energy
delivery device.~~

49. (canceled)

~~50. (previously presented): The apparatus of claim 74, further comprising:
a thermally conductive material coupling the sensor to an exterior surface of the distal
portion.~~

51-52. (canceled)

~~53. (previously presented): The apparatus of claim 74, wherein the energy delivery
device is an RF energy delivery device coupled to an RF energy source.~~

~~54. (previously presented): The apparatus of claim 74, wherein the energy delivery
device is a resistive heating element coupled to a resistive heating source.~~

~~55. (previously presented): The apparatus of claim 74, wherein the energy delivery
device is a microwave probe coupled to a microwave source.~~

BOARD DEC/5/96

56-73. (canceled)

74. (previously presented): An apparatus comprising:

an energy delivery device including a proximal portion and a distal portion, the energy delivery device being configured to deliver sufficient energy to a selected site to effect a contraction in at least a portion of collagen containing tissue at the selected site, the distal portion including a thermally conductive material; and

a sensor completely enclosed by the thermally conductive material, and positioned within the thermally conductive material to detect a thermal energy from the selected site and from an adjacent fluid medium, the sensor producing a thermal feedback signal which represents a composite of the thermal energy detected from the selected site of the collagen containing tissue and from the fluid medium, the energy delivery device including circuitry for supplying the thermal feedback signal to a feedback control system for adjusting a level of energy delivered by the energy delivery device to at least the portion of the selected site of the collagen containing tissue.

75. (currently amended): The apparatus of claim 74, further comprising a surface material separate from the thermally conductive material forming at least part of an exterior surface of the energy delivery device and covering at least part of the thermally conductive material.

76. (previously presented): The apparatus of claim 75, wherein the surface material comprises stainless steel.

77. (previously presented): The apparatus of claim 74, wherein the thermally conductive material that surrounds the sensor extends from a distal tip of the energy delivery device to a position proximal to the sensor.

~~78. (previously presented): The apparatus of claim 74, wherein the circuitry for supplying the thermal feedback signal to the feedback control system comprises a conductor.~~

79. (previously presented): The apparatus of claim 74, wherein the thermally conductive material that surrounds the sensor forms at least part of an exterior surface of the energy delivery device.

80. (previously presented): The apparatus of claim 79, wherein the part of the exterior surface formed by the thermally conductive material extends from a distal tip of the energy delivery device to a position proximal to the sensor.

81. (previously presented): The apparatus of claim 79, wherein the part of the exterior surface formed by the thermally conductive material includes substantially all exterior surface of the energy delivery device from a distal tip of the energy delivery device to a position proximal to the sensor.

82. (previously presented): An apparatus comprising:

an energy delivery device including a proximal portion and a distal portion, the energy delivery device being configured to deliver sufficient energy to a selected site to effect a contraction in at least a portion of collagen containing tissue at the selected site, the distal portion including a thermally conductive material;

a sensor completely enclosed by the thermally conductive material, the sensor being positioned within the thermally conductive material to detect a thermal energy from the selected site and from an adjacent fluid medium, the sensor producing a thermal feedback signal which represents a composite of the thermal energy detected from the selected site of the collagen containing tissue and from the fluid medium; and

BOARD DECISION

~~a feedback control system coupled to the sensor and configured to receive the thermal feedback signal and adjust a level of energy delivered by the energy delivery device to at least the portion of the selected site of the collagen containing tissue.~~

83. (currently amended): The apparatus of claim 82, further comprising a surface material separate from the thermally conductive material forming at least part of an exterior surface of the energy delivery device and covering at least part of the thermally conductive material.

84. (previously presented): The apparatus of claim 83, wherein the surface material comprises stainless steel.

85. (previously presented): The apparatus of claim 82, wherein the thermally conductive material that surrounds the sensor extends from a distal tip of the energy delivery device to a position proximal to the sensor.

86. (previously presented): The apparatus of claim 82, wherein the thermally conductive material that surrounds the sensor forms at least part of an exterior surface of the energy delivery device.

87. (previously presented): The apparatus of claim 86, wherein the part of the exterior surface formed by the thermally conductive material extends from a distal tip of the energy delivery device to a position proximal to the sensor.

88. (previously presented): The apparatus of claim 86, wherein the part of the exterior surface formed by the thermally conductive material includes substantially all exterior surface of the energy delivery device from a distal tip of the energy delivery device to a position proximal to the sensor.

BOARD DECISION

89. (previously presented): A method of delivering energy, the method comprising:

providing an energy delivery device including a distal portion having a thermally conductive material and a sensor completely enclosed by the thermally conductive material, the sensor being positioned within the thermally conductive material to detect a thermal energy from the selected site and from an adjacent fluid medium;

delivering sufficient energy with the distal portion of the energy delivery device to a selected site to effect a contraction in at least a portion of collagen containing tissue at the selected site;

producing a thermal feedback signal which represents a composite of the thermal energy detected from the selected site of the collagen containing tissue and from the adjacent fluid medium with the sensor; and

adjusting a level of energy delivered by the energy delivery device to at least the portion of the selected site based on the thermal feedback signal.

90. (previously presented): The method of claim 89, wherein delivering sufficient energy to the selected site to effect a contraction in at least a portion of collagen containing tissue at the selected site causes fluid medium in a vicinity of the portion of collagen containing tissue to increase in thermal energy, and the method further comprises:

moving the energy delivery device away from the portion of collagen containing tissue at the selected site after delivering sufficient energy; and

moving the energy delivery device back toward the portion of collagen containing tissue at the selected site, after moving away, and sensing an elevated composite temperature due to the increased thermal energy in the fluid medium.

91. (previously presented): The method of claim 90, wherein at least part of the increased thermal energy in the fluid medium is dispersed through the fluid medium.

Applicant : Hugh Sharkey and Gary S. Fanton
Serial No. : 08/714,987
Filed : September 17, 1996
Page : 7 of 11

Attorney's Docket No.: 14170-014001 / 25-31-0017

92. (previously presented): The method of claim 90, wherein delivering an adjusted level of energy comprises delivering a lower level of energy to reduce overheating of the previously heated portion of collagen containing tissue, the lower level of energy being based on the elevated composite temperature that was sensed.

93. (previously presented): The method of claim 89, wherein:

delivering sufficient energy to the selected site to effect a contraction in at least a portion of collagen containing tissue at the selected site causes fluid medium in a vicinity of the portion of collagen containing tissue to increase in thermal energy,

producing a thermal feedback signal comprises sensing an elevated composite temperature due to the increased thermal energy in the fluid medium, and

delivering an adjusted level of energy comprises delivering a lower level of energy to reduce stray contractions caused by increased thermal energy in the fluid medium.

94. (previously presented): The method of claim 89, wherein thermal energy is conducted through the thermally conductive material to the sensor.

BOARD
DECISION